



ACCUCRAFT TRAINS
ELECTRIC & LIVE STEAM MODELS



**SR&RL #6 and WW&F #9 FORNEY
CERAMIC BUTANE FIRED
INSTRUCTION MANUAL**

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History of the SRRL #6 and WW&F #9

The Portland Company constructed 0-4-4 Forney #5 in 1891 for the Sandy River Railroad. The locomotive was named "N.B. Neal" and operated this way until 1908 when the Sandy River, Franklin & Megantic, Philips & Rangeley, along with their respective subsidiary railroads merged to form the Sandy River & Rangeley Lakes. At this time the loco was renumbered to SR&RL #6. In 1925 the loco was sold to the Kennebec Central, becoming their #4. She was again sold in 1933 to the Wiscasset, Waterville & Farmington as their #9. After the WW&F railroad was abandoned in 1936-'37, it was purchased and stored near Putnam, Connecticut.

In December 1994, an agreement was reached with the estate for WW&F #9 and its return to Maine for eventual restoration. Over the course of several years the loco was restored and is now featured in regular excursion over a restored section of the railroad.

Safety

For your safety, there are certain rules that should be observed, as follows:

1. The safety valve is under the steam dome (the dome nearest the cab). It has been set at the factory to release at 60 pounds per square inch of pressure. Never tamper with the safety valve.
2. The firing system has been designed to use butane gas only. Never use pure propane. Care must be taken with a butane/propane mix as the storage pressures can reach unsafe levels.
3. Always refuel the engine away from other working live-steam locomotives. The fuel filling system allows a small amount of the gas to bleed off as the fuel tank is being filled. A passing engine can ignite this bleed-off gas, causing a potentially hazardous situation.
4. When lighting up, light your match first, then turn on the gas.
5. A steam engine gets hot. Be careful when operating the controls and moving the model.

General Information

Operating a model live steam locomotive is much different from running an electrically powered engine. It is a more hands-on, interactive experience. The locomotive must be periodically fueled, oiled and watered. As supplied, the locomotive is manually controlled, which means that you must actually drive the locomotive using the controls in the cab, just as you would a full-size engine. The performance of the engine is also unlike electric locomotives. The locomotive should pull a dozen or more standard-size freight cars on good, level track. Grades and sharp curves will diminish its capability. A good engineer will learn the engine's characteristics and idiosyncrasies over time, to get the best performance and longest duration from it.

The wood box that holds your locomotive can be opened by sliding off the top board.

Items Needed

Aster/Accucraft Draft Fan (AP28-200 single speed draft fan or AP28-201 variable speed draft fan)
Steam Oil (AP28-203)
Butane Gas

Recommended Items

Steam Oil Syringe (AP29-201 or AP29-120)
Gloves
Matchstick or BBQ Lighter

About Your Boiler

A good place to begin the firing process is to have a thorough understanding of your locomotive's boiler and how it behaves. The boiler in your locomotive duplicates a full size boiler in all aspects, including significant areas of flat surface.

The major flat surfaces are the firebox front, sides and top, the boiler front sheet and the flat outside portions of the boiler wrapper surrounding the firebox. The firebox is surrounded by water legs on 3 sides, the back being dry. These flat surface water legs are supported against the internal pressures by copper rods or stays tying them to each other. The top of the firebox, or crown sheet, also basically flat, is supported from collapsing by vertical plates that connect it to the outer shell, or wrapper. The front of the firebox, or rear flue sheet, and the front of the boiler, or front flue sheet, are supported against boiler pressure by being connected to each other with the tubes and flue. The barrel of the boiler, being spherical, is self-supporting within the limits of its design strength.

Several of these boiler plates are flanged and all are assembled using a high strength, high temperature, silver bearing brazing compound. To maintain joint strength, those boiler plates exposed to the combustion process, more particularly the crown sheet, must be in direct contact with and covered at all times by the water in the boiler. This means **WATER LEVEL IS CRITICAL**.

The boiler is designed to function at a working pressure between 60 and 75 pounds per square inch. This pressure is continuously trying to collapse the crown sheet and inner firebox sides. The water level must be maintained above a point equivalent to the bottom edge of the blower pass through pipe at all times. The lower working limit for water level is the top of the lower nut on the water gauge.

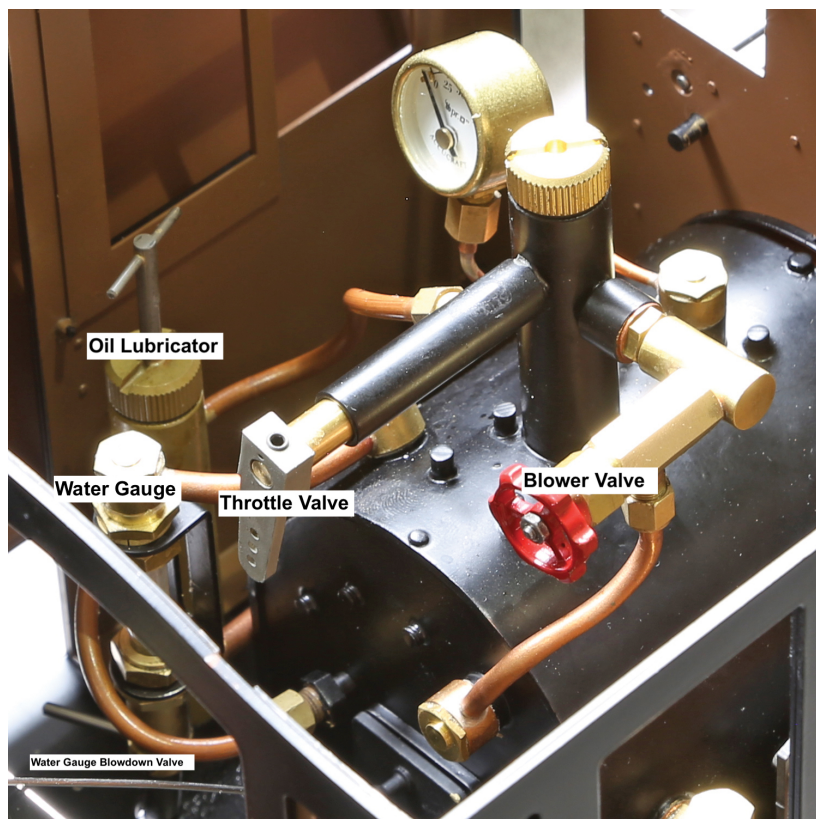
Maximum water level is not critical, but should not exceed the bottom edge of the top nut of the water gauge. Over filling the boiler results in the engine priming, or passing water to the cylinders, and can be noticed by a spray or mist of water coming from the cylinder exhaust or blower stream exiting the smokestack.

Water

Distilled water that has been "DEIONIZED" is extremely active electrically and should NEVER be used in your boiler. Often water will be OZONATED to kill bacteria. Water that has been ozonated is acceptable as long as it has also been steam distilled.

****** We recommend only the use of STEAM DISTILLED water in your boiler ******

Cab Controls



Preparing the engine

A steam-locomotive engineer goes through a lighting-up ritual every time the engine is to be run. It is good to follow the same routine each time so that nothing is overlooked.

1. Oil all external moving parts of the engine, including wheel bearings, with a high grade, lightweight machine oil like 3-in-1. Be sure to oil all parts of the drive train, including the valve gear. A little oil is all that's necessary.
2. Place the engine on track.
3. The lubricator located in the cab ensures the cylinders and valves are properly lubricated inside. As the steam passes through it, a small amount will condense into water. This water will sink to the bottom of the lubricator, forcing a similar quantity of oil into the steam line and thus to the cylinders.

Remove the lubricator cap and draw out any water from previous run with a syringe. Use only proper steam cylinder oil. Fill the lubricator, but leave a small air space between the oil and the cap.

4. Unscrew the filler plug and fill the boiler to the top with water then pull out 30 ml with large syringe. Use only distilled water in your engine's boiler. Tap water contains minerals that will leach out and ultimately affect the performance of the engine. You can also pump water from the water tank with the hand pump.

5. Finally, add fuel. Your Forney burns butane gas. The gas tank is located in the water tank beneath the cover. Butane gas can be purchased at the grocery store or at a tobacconist's as cigarette-lighter refills. These come with a nipple suitable for the filler valve on the gas tank. (Butane can also be purchased in larger containers at camping-supply stores, but these cans will require a special adapter for filling the engine's tank, which can be purchased from Accucraft, part number AP23-101.) Simply press the nozzle of the butane canister hard onto the filler valve atop the tank, making sure that the control valve is closed. You will hear the gas transferring and will see a little gas bleeding out of the valve. When the tank is full, the gas will begin to splutter and much more gas will escape the valve. When the gas tank is full you are ready to fire up the engine. Add water to the rear tank. This will keep the tank warm and the gas pressure up.

Firing Up

Close the throttle and the blower valve. Place a battery powered suction fan in the smoke stack but do not turn it on yet. Open the hinged firebox door at the back of the boiler in the cab and you'll be able to see the ceramic over the burner. To light up, strike a match or use a BBQ lighter and hold it at the open firebox door while simultaneously opening the gas valve in the tender very slowly until the gas ignites. You should hear the gas coming into the burner. Make sure the burner is lit by looking in the fire door, then immediately turn on the suction fan.

A strong fire is crucial to keep the Forney at pressure during running. The jet and gas line should be kept clear and checked for clogs. The factory provided jets have a slightly larger nozzle than most other jets on smaller engines.

It will take approximately several minutes to raise pressure. Once the gauge shows some pressure has built, you can shut off and remove the suction fan from the stack and then open the engines blower valve. At this point steam will rise rapidly! When the gauge reads 50 psi, the engine is ready to run.

Drain Cocks

This locomotive is fitted with working drain cocks on the cylinders. When first starting out, the cocks should be open (levers facing down). This will allow water in the cylinders to drain while the cylinders heat up to working temperature. As steam enters cold cylinders, it condenses, so expect a fair amount of water to come out at the beginning of each run. Once the cylinders have warmed up, you can close the drain cocks. To close them, move the levers to the "up" position.

Running

Move the reversing lever at the right side of the cab to the forward position. With the engine on the track, and without a train, open the throttle. The engine may need to be pushed a little to overcome the steam condensing into water in the cold cylinders, but the open drain cocks will minimize this. After a few moments, the engine should take off on its own, moving away smoothly.

When the engine is running, the blower valve can be turned down but should be open whenever the engine is stopped. A train can be coupled on and the run can proceed. Since all of the locomotive's functions are controlled

from the cab, it can be driven like a full-size engine, meaning that you'll have to stay with the engine through the run if you want to change its speed or direction. If you have a suitable track, the engine can be left to run on its own at a steady speed.

Keep your eye on the water glass. If the level drops lower than the top of the water gauge nut, stop the engine and use the hand pump or Goodall valve to add water. When under pressure, the blowdown valve can be opened and closed quickly to clear out any air bubbles from the water gauge for an accurate reading.

Shutting down

To shut the engine down, simply close the gas valve. Make sure the fire is completely out before turning off the steam blower if engine is standing still. This will minimize the chance of the paint getting scorched from any fire still burning in the firebox that is not vented! After a day's operation in the garden, you'll probably find that your engine has a coating of oil all over it. This is steam-cylinder oil that has been exhausted from the stack. A simple wipe down with a dry cloth is all that's necessary to restore the engine to pristine condition. This is best done while the engine is still warm. Wipe any grit and excess oil from the wheels and running.

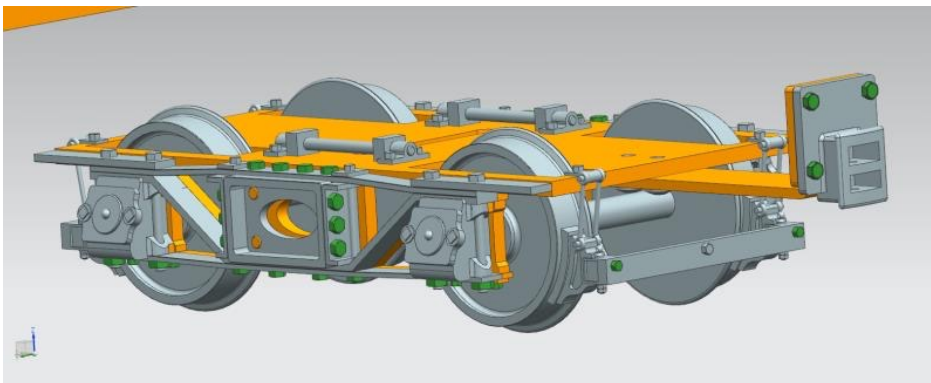
Cold Weather Running

The weather can dramatically affect the performance of your locomotive. Cold and wind can decrease efficiency to a disappointing level. Butane gas becomes liquid at 32°F and will not work. As it approaches 32°F, its pressure (and effectiveness) diminishes.

The compartment in the rear tank in which the gas tank resides can be filled with warm water in cooler weather. This will warm the gas in the tank and keep its pressure up, which will cause the engine to operate in a much more lively manner, much as it does in warm weather. If the water in the tank cools, just replace it with warmer water. Empty the tender at the end of the day's run. Note: the temperature of the fuel-supply-can must always be higher than that of the engine's gas tank. If you have warmed the engine's gas tank and the supply can is cooler, gas will not transfer. **Never put hot boiling water in the compartment. This could cause dangerous pressure levels in the gas tank. The water should be comfortable enough to put your finger in.**

Truck Mounted Coupler

The coupler that is attached to the back of the model can be removed and attached to the rear truck with a special extension bar provided. This is useful for pulling rolling stock on layouts with smaller curves. First remove the truck from the model before attempting to install the coupler bar.



Removing the Cab

The cab can be removed in two ways. The handrails that go into the cab are held to the boiler casing by a small amount of glue which can be released by heating up the points of contact. Once they are removed from the cab, the screws that hold the cab to the floor can be removed and the cab lifted off.

The other method is to remove the water tank and rear bunker. First unscrew the bolts that hold the water pipe and gas pipe to the floor of the water tank. Then remove the straps that hold the gas tank and remove the gas tank. Remove the two screws to the right of the hand pump and now the water tank should lift out. The handpump can stay with the tank. Finally remove the screws that hold the bunker to the floor.